Jessica Burnett, Ph.D.

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Key Skills

- Well-published Ph.D. Earth science researcher with 16 publications in top Earth science journals, 1 book chapter, 3 software programs, and numerous government white papers and reports.
- Experience developing and applying cutting-edge Bayesian and frequentist statistical methods to support ecosystems management and understanding.
- Over 7 years experience designing and implementing multi-year programs to answer important scientific questions, generate actionable intelligence for end user organizations, create cross-program synergies, and advance government agency missions.
- Passionate relationship builder whose efforts have resulting in NASA being a recognized and sought-after partner for achieving wildlife management and conservation goals in North America.
- Over a decade of experience in integrating and managing concurrent research projects with an emphasis on Earth and life sciences including wildlife conservation, applied geospatial science, scientific programming, and statistical modeling.
- Judicious communicator with strong interpersonal and presentation skills who has proven experience in presenting to audiences of up 500 people in person and via audio and video conferencing platforms with presentations to lay audiences, scientific communities, and decision makers alike.
- Experience in developing, evaluating, marketing, and measuring progress of competitive funding solicitations.

Education

6 credit hours of pre-calculus mathematics coursework 10 total credit hours of calculus coursework 32 total credit hours of probability & statistics coursework

Ph.D. in Natural Resource Sciences, *University of Nebraska-Lincoln*, Lincoln, Nebraska | 2019
15 credit hours of life sciences, 7 credit hours of probability & statistics, 52 credit hours of research
M.S. in Wildlife Ecology & Conservation, *University of Florida*, Gainesville, Florida | 2015
30 credit hours of life sciences, 13 credit hours of probability & statistics, 20 credit hours of research
B.S. in Wildlife Ecology & Conservation, *University of Florida*, Gainesville, Florida | 2013
74 credit hours of life sciences, 9 credit hours of statistics, 5 credit hours of research
A.A. in General Studies, *Valencia Community College*, Orlando, Florida | 2010 42 credit hours of life sciences, 3 credit hours of probability & statistics, 5 hours of pre-calculus mathematics, 10 hours of calculus

Professional Experience

National Aeronautics and Space Administration (NASA), Washington, D.C. US
Program Executive, Earth Science Data Systems Earth Science Division, NASA Headquarters | November 2024 - Present | 40 hours per week | GS-15-3

- *Bullets in draft*

National Aeronautics and Space Administration (NASA) , Washington, D.C. US
Program Coordinator, Ecological Conservation, Earth Science Division, NASA Headquarters | August 2022 - Present | 40 hours per week | GS-15-2 equivalent

- Spearhead integration of NASA data and technologies into North American wildlife management, bridging resource gaps for conservation organizations.
- Drive strategic program planning, overseeing fund solicitation, analysis, peer review panels, and proposal evaluation.
- Provide expert guidance in wildlife ecology and conservation, shaping a comprehensive plan for NASA's Ecological Conservation program.

- Represent NASA in high-level initiatives like the Natural Capital Accounting, Statistics for Environmental-economic Decisions Presidential Working Group, National Nature Assessment federal steering committee, the National Plan for Civil Earth Observations, and National Invasive Species Council.
- Cultivate collaborative partnerships with federal, state, and non-governmental conservation organizations and landowners. Efforts resulted in key conservation agencies and organizations soliciting NASA to establish memorandum of understanding to establish long-term commitments.
- Advocate for the application of NASA science in wildlife and natural resource policy through representation in global and domestic science and technology working groups.
- Champion and empower students from underrepresented backgrounds, directing and supervising projects pivotal to program development, evaluation, and expansive outreach initiatives.
- Serve as a technical expert on ecology and conservation issues for data calls from agencies like the White House Office of Science and Technology Policy (OSTP).
- Deliver impactful messages in public forums and organize large-scale events for diverse audiences, resulting in an expanded NASA data end user base, numerous new, first-time Principal Investigator applications, and.
- First-time recipient of the prestigious AAAS Science & Technology Policy fellows and one (of only 2) out of 300 awardees invited to serve NASA.
- Leading development of a strategic and business plan for the Ecological Conservation applications area to help guide 1-year and 3-year investments.
- Represent NASA on several executive-level initiatives including but not limited to the National Nature Assessment federal steering committee, Natural Socioeconomic Accounting Presidential Working Group, National Invasive Species Council, National Civil Earth Observations Plan writing team to ensure NASA's interests, data, and expertise are best leveraged.
- Establish and manage external relationships with federal, state, and non-governmental conservation organizations and landowners. These strategic investments resulted in an MOU inquiry from the Department of Interior U.S. Fish & Wildlife Service Assistant Director for Science Applications.
- Spearhead cross-organizational efforts to build new relationships with tribal-serving organizations, resulting in new end users, new
- Develop and implement an annual outreach strategy for engaging with and synthesizing the needs of federal, state, tribal, and non-governmental end user organizations. Tactics deployed for achieving strategy include conference exhibits, sponsored events, targeted oral presentations to conservation coalitions, and facilitating development of communications materials.
- Supervise and mentor high school and undergraduate students through NASA OSTEM program.
- Serve as technical expert for ecology and conservation issues on data calls from executive agencies such as the White House Office of Science and Technology Policy (OSTP).
- Spearhead efforts to improve cross-organizational communications and collaborations with NASA Earth Science Data Systems and the Office of the Chief Science Data Officer (OSDO), including co-sponsorship of events, contributing to development of NASA Open Science Data Policy (SPD-41a), and developing solicitation language to ensure policy compliance.
- Judiciously convey important messaging in public panels, presentations, and video conferencing platforms. Develop and deliver oral presentations to a variety of audiences ranging from scientists to federal administrators.
- Develop and organize in-person, online, and hybrid conferences, workshops, symposia, and special events for audiences of up to 600 people.
- Gain familiarity with numerous NASA airborne campaigns and spaceborne missions and mission lifecycle.

U.S. Geological Survey (USGS), Biogeographic Sciences Branch, Denver, Colorado, US
Research Ecologist and Data Scientist (GS-12-3) | August 2019 - August 2022 40 hours per week | GS-12-4

- Received cash awards for exceptional performance on all annual reviews.
- Develop cutting-edge statistical (Bayesian) methods for estimating bird population parameters.
- Key player in establishing cross-organization relationships to broaden client use of division's research assets, including remotely sensed biogeographic data products, high performance computing resources, and technical expertise.
- Published 3 peer-reviewed papers in top Earth Science journals, including 1 influential article outlining key priorities for synthesis in environmental research.

- Developed and published well-known, open-source software to enable applications of an important USGS data asset to natural resource management and wildlife conservation activities.
- Participated in several initiatives focused on diversifying the scientific professional and academic communities including the Disabled in STEM, Skype a Scientist, and Letters to a Prescientist programs.

University of Nebraska-Lincoln (UNL), Lincoln, Nebraska, US
Statistical and Applied Ecology Graduate Research Assistant | August 2015 - July 2019 | 40 hours per week | GS 7-1 equivalent

- Spearheaded the development of department-level and university-level activities focused on advancing awareness around and resources for women and underrepresented groups in science, including policy development, professional development and training, and university-level investments. Efforts resulted in the University President investing in the Association for Women in Science as an institutional member, and in the development of the University chapter of the Natural Resources Diversity Initiative.
- Created and led week-long workshop for the end users at the state of Nebraska's natural resource agency, focusing on technologies for applied statistics, data management, and applications for geospatial inference.
- Published peer reviewed articles in top natural resources and computational journals.
- Managed multiple, concurrent research projects with international and domestic collaborators, leading outreach efforts to improve applications of products for natural resource management at U.S. military bases.
- Served as a mentor to several graduate and high school students while helping them set their own professional and personal development goals.
- Represent the interests and perspectives of the graduate student body through activities such as committee membership and serving on faculty hiring committees.

International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria
Visiting Researcher for Applied Systems Analysis | April 2018 - August 2018 | 40 hours per week | GS 7-1 equivalent

- First-time recipient (of over 500 international applicants) of the renowned Young Scholar Summer Program fellowship, with financial support competitively awarded by the U.S. National Academy of Sciences.
- Designed and led collaborative research with applied mathematicians and Earth scientists, resulting in multiple international presentations, a peer-reviewed journal article, and software releases.

University of Florida (UF), Gainesville, Florida, US
Invasion and Avian Ecology Graduate Research Assistant | August 2013 - August 2015 | 40 hours per week

- Sought and received funding from the local police department and the University of Florida to enable nature-based activities, including new on-site trail development, at a local at-risk-of-recidivism youth program.
- Designed and conducted research resulting in 3 publications and becoming a top expert on urban bird populations.
- Taught and mentored undergraduate students, including developing workshops and lectures on the topics of scientific programming, invasive species, and geospatial modeling.
- Served as a graduate student representative on university and departmental initiatives.

Notable Awards & Achievements

- First-time applicant recipient of the prestigious AAAS Science & Technology Policy Fellowship
- First-time applicant recipient of the U.S. Geological Survey's coveted Mendenhall Postdoctoral Research Fellowship
- Received 2 cash awards for Exceptional Service during both full-fiscal years served at U.S. Geological Survey
- Recipient of several competitive science technology and policy scholarships, fellowships, and awards totaling over $350,000 USD
- Developed and taught numerous professional workshops and academic courses in topics including Scientific Programming, Statistics, Life Sciences, Ornithology, and Ecology

Publications

📚 16 peer-reviewed publications 📖 1 book chapter 📄 *in top Earth and life science journals*

1. B. S. Halpern, C. Boettiger, M. C. Dietze, J. A. Gephart, P. Gonzalez, N. B. Grimm, P. M. Groffman, J. Gurevitch, S. E. Hobbie, K. J. Komatsu, others, Priorities for synthesis research in ecology and environmental science. *Ecosphere*. **14**, e4342 (2023).

2. C. Allen, J. L. Burnett, C. P. Roberts, D. Twidwell, D. G. Angeler, SERDP project RC-2510: Global change, vulnerability and resilience: Management options for an uncertain future (2019).

3. J. L. Burnett, R. Dale, C.-Y. Hou, G. Palomo-Munoz, K. S. Whitney, S. Aulenbach, R. S. Bristol, D. Valle, T. P. Wellman, Ten simple rules for creating a scientific web application. *PLOS Computational Biology*. **17**, e1009574 (2021).

4. R. A. Erickson, J. L. Burnett, M. T. Wiltermuth, E. A. Bulliner, L. Hsu, Paths to computational fluency for natural resource educators, researchers, and managers. *Natural Resource Modeling*. **34**, e12318 (2021).

5. J. L. Burnett, C. R. Allen, "Continental analysis of invasive birds: North america" in *Global trends and impacts of alien invasive birds*, C. T. Downs, L. A. Hart, Eds. (CABI, Wallingford, U.K., 2020).

6. J. L. Burnett, L. Wszola, G. Palomo-Muñoz, bbsAssistant: An r package for downloading and handling data and information from the north american breeding bird survey. *Journal of Open Source Software*. **4**, 1768 (2019).

7. J. L. Burnett, thesis, University of Nebraska-Lincoln (2019).

8. C. P. Roberts, D. Twidwell, J. L. Burnett, V. M. Donovan, C. L. Wonkka, C. L. Bielski, A. S. Garmestani, D. G. Angeler, T. Eason, B. W. Allred, M. O. Jones, D. E. Naugle, S. M. Sundstrom, C. R. Allen, Early warnings for state transitions. *Rangeland Ecology & Management*. **71**, 659–670 (2018).

9. V. M. Donovan, J. L. Burnett, C. H. Bielski, H. E. Birge, R. Bevans, D. Twidwell, C. R. Allen, Social-ecological landscape patterns predict woody encroachment from native tree plantings in a temperate grassland. *Ecology and Evolution*. **8**, 9624–9632 (2018).

10. F. A. La Sorte, C. A. Lepczyk, J. L. Burnett, A. H. Hurlbert, M. W. Tingley, B. Zuckerberg, Opportunities and challenges for big data ornithology. *Condor*. **120**, 414–426 (2018).

11. W. C. Chuang, A. Garmestani, T. N. Eason, T. L. Spanbauer, H. B. Fried-Petersen, C. P. Roberts, S. M. Sundstrom, J. L. Burnett, D. G. Angeler, B. C. Chaffin, L. Gunderson, D. Twidwell, C. R. Allen, Enhancing quantitative approaches for assessing community resilience. *Journal of Environmental Management*. **213**, 353–362 (2018).

12. J. L. Burnett, L. P. Kevin, A. Wong, C. R. Allen, D. M. Haak, B. J. Stephen, D. R. Uden, Thermal tolerance limits of the Chinese mystery snail (bellamya chinensis): Implications for management. *American Malacological Bulletin*. **36**, 140–144 (2018).

13. J. L. Burnett, C. P. Roberts, C. R. Allen, M. B. Brown, M. P. Moulton, Range expansion by Passer montanus in North America. *Biological Invasions*. **19**, 5–9 (2017).

14. C. R. Allen, H. E. Birge, S. Bartelt-Hunt, R. A. Bevans, J. L. Burnett, B. A. Cosens, X. Cai, A. S. Garmestani, I. Linkov, E. A. Scott, M. D. Solomon, D. R. Uden, Avoiding decline: Fostering resilience and sustainability in midsize cities. *Sustainability*. **8** (2016), doi:10.3390/su8090844.

15. J. L. Burnett, K. E. Sieving, Songbird distress calls as an improved method for detecting red-shouldered hawks (Buteo lineatus). *Florida Field Naturalist*. **44**, 157–168 (2016).

16. J. L. Burnett, M. P. Moulton, Recent trends in house sparrow (passer domesticus) distribution and abundance in Gainesville, Alachua county, Florida. *Florida Field Naturalist*. **43**, 167–172 (2015).

Presentations

Invited

1. NASA Earth Science Division: Opportunities for the Next Generation of Wildlife Professionals (presentation and panelist). *The Wildlife Society*, Louisville, KY, 2023

2. NASA Earth Science for Fisheries Ecology and Management. *American Fisheries Society Conference*, Grand Rapids, MI, 2023

3. NASA Earth Science for Wildlife Ecology and Conservation. *USGS Ecosystems Missions Area leadership*, Virtual, 2023

4. NASA Earth Science for Forest Ecology, Conservation, and Fire Management. *Society of American Foresters*, Sacramento, CA, 2023

5. An overview of state fish and wildlife agency use of federal geospatial data. *Association of Fish & Wildlife Agencies annual meeting*, Calgary Canada, 2023

6. Overview of NASA Earth Science Division resources and opportunities. *University of Colorado*, Boulder, CO, 2023

7. Satellite and airborne remote sensing for wildlife conservation in the West. *Western Association of Fish & Wildlife Agencies summer meeting*, Santa Fe, NM, 2023

8. Satellite remote sensing for freshwater fisheries and aquatic sciences. *North American Wildlife and Natural Resources Conference*, St. Louis, MO, 2023

9. Opportunities for STEM students at NASA: an emphasis on SMD and ESD student and early career resources and opportunities. *Salt Lake City Community College*, Salt Lake City, UT, 2023.

10. Overview of NASA Earth Science Division Ecological Conservation Applications Area for USGS and US Fish & Wildlife Service. *Patuxent Wildlife Research Center and Refuge*, Laurel, MD, 2022

11. Users and uses of the North American Breeding Bird Survey. Cross-organizational presentation at the *U.S. Geological Survey*, Denver, CO, 2022

12. Integrating data and information to enhance the digital efficiency of wildlife conservation and management. *North American Ornithological Conference*, Washington, D.C., 2020

13. Regime Detection Measures for the Practical Ecologist, Department of Wildlife Ecology & Conservation, University of Florida, Gainesville, FL, 2019

14. Detecting abrupt change in bird community time series using distance traveled. *Association for Women in Math Biology Symposium*, Special session "Current Challenges in Mathematical Biology", Houston, TX , 2019

15. Decline of the Once-Ubiquitous House Sparrow in North America. *Nebraska Invasive Species Council*, Lincoln, NE , 2015

Contributed

1. Estes, M. & **Burnett, J.L.**. Fisheries ecology and management using NASA data assets. *9th World Fisheries Congress*, Oral presentation. Seattle, WA, 2024

2. **Burnett, J.L.**. Advances in airborne and satellite remote sensing for wildlife ecology and management. *The Wildlife Society*, Oral presentation and panelist. Louisville, KY, 2023

3. **Burnett, J.L.**, N.B. Price, and A.J. Tyre. A novel method for tracking ecosystem trajectory and abrupt change in space-time: distance traveled. *International Association for Landscape Ecology*, Oral presentation. Fort Collins, CO, 2019

4. **Burnett, J.L.**, R. Crystal-Ornelas, D. Fogarty, K. Hogan, C.R. Allen, M. Bomberger Brown, D. Twidwell, and C.A. Lepczyk. Impacts of non-native birds on native wildlife in urban ecosystems: where is the evidence? *Natural Areas Conference*, Oral presentation. Indiana, 2018

5. **Burnett, J.L.**, B. Fath, A. Rodenkova. Advances in ecological regime shift detection, *International Institute for Applied Systems Analysis*, Oral presentation. Laxenburg, Austria, 2018

6. **Burnett, J.L.**, N.B. Price, A.J. Tyre, T.J. Hefley, C.R. Allen, T. A. Eason, D.G. Angeler, and D. Twidwell. Community velocity as a regime shift detection method. *Great Plains Grassland Summit*, Poster presentation. Denver, Colorado, 2018

7. **Burnett, J.L.**, L. Wszola, N. Mirochnitchenko, E. Stuber, M. Bomberger Brown, and J.P. Carroll. Gray partridge distribution in North America: Changing landscapes and environment for an introduced species. 33*rd* International Congress of the International Union of Game Biologists (IUGB), Oral presentation delivered by JPC, Montpellier, France, 2017

8. **Burnett, J.L.**, N.B. Price, A.J. Tyre, T.J. Hefley, C.R. Allen, T. A. Eason, D.G. Angeler, and D. Twidwell. System trajectory and Fisher information as early-warning indicators of ecological regime shifts. *Resilience 2017: Resilience Frontiers for Global Sustainability*, Poster presentation. Stockholm, Sweden, 2017

9. **Burnett, J.L.**, N.B. Price, A.J. Tyre, T.J. Hefley, C.R. Allen, T. A. Eason, D.G. Angeler, and D. Twidwell. System trajectory and Fisher information as early-warning indicators of ecological regime shifts. *Ecological Society of America*, Poster presentation. Portland, OR, 2017

10. **Burnett, J.L.**, Roberts, C.P., Allen, C.R., Angeler, D.G., Twidwell, D., and Tyre, A.J. Ecological Regime Shifts in the Central Great Plains. *Great Plains Symposium*, Oral presentation. Nebraska Innovation Campus, Lincoln, NE, 2017

11. **Burnett, J.L.**, Roberts, C.P., Allen, C.R., Angeler, D.G., Twidwell, D., and Tyre, A.J. Using Big Data to Detect Regime Shifts in Space and Time. *North American Ornithological Conference VI*, Poster presentation. Washington, D.C., 2016

12. **Burnett, J.L.**, Moulton, M. P., Sieving, K.E., Avery, M., and Robinson, S.K. Are House Sparrow declines a byproduct of urban greening? *Southeastern Ecology and Evolution Conference*, Oral presentation. University of Georgia, Athens, GA, 2015

13. **Burnett, J.L.**, Moulton, M. P., Sieving, K.E., Avery, M.L., and Robinson, S.K. Are House Sparrow declines a byproduct of urban greening? *American Ornithologists' Union and Cooper Ornithological Society Annual Meeting*, Poster presentation. Norman, OK, 2015

14. **Burnett, J.L.**, Moulton, M.P., and Sieving, K.E. House sparrow: the decline of a once ubiquitous, invasive species. *Florida Chapter of The Wildlife Society Annual Conference*, Poster presentation. Safety Harbor, FL, 2014

15. **Burnett, J.L.**, Moulton, M. P., Sieving, K.E., Avery, M.L., and Robinson, S.K. House Sparrow decline and distribution in North Central Florida. *Florida Cooperative Fish and Wildlife Research Unit annual cooperators meeting*, Poster presentation. Gainesville, FL, 2014

16. **Burnett, J.L.** and Sieving, K.E. Detecting birds of prey using tufted titmouse distress calls. *USGS Florida Cooperative Fish and Wildlife Research Unit Committee Meeting*, Poster presentation. Gainesville, FL, 2013

17. **Burnett, J.L.** and Sieving, K.E. Do actual and perceived risks of small forest birds align? *Florida Ornithological Society Conference, Oral presentation*, St. Petersburg, FL, 2013

18. **Burnett, J.L.** and Sieving, K.E. Perceived predation risks of small forest birds. *Association of Field Ornithologists Annual Conference*, Poster presentation. Venus, FL, 2013

Select Conferences, Workshops & Symposia Coordination

Select conferences and workshop organization

1. Applied Earth Observations Innovation Partnership annual workshop (~200 attendees). *Workshop organizer*, Ann Arbor, 2024
2. NASA Biodiversity & Ecological Conservation annual science and applications team meeting (~250 attendees, ~75 sessions). *Conference co-organizer*, Washington, D.C., 2024
3. NASA Ecological Conservation annual retreat. *Workshop co-organizer and moderator*, Kennedy Space Center, 2024.
4. NASA Earth Science Data and Compute workshop. *Workshop organizer and moderator* (~75 attendees), College Park, MD, 2023
5. NASA Carbon Cycle and Ecosystems Joint Science Workshop. *Conference co-organizer and moderator* (~500 attendees), College Park, MD, 2023
6. Applied Earth Observations Innovation Partnership annual workshop. *Workshop co-organizer* (~200 attendees), Salt Lake City, UT, 2023
7. NASA Ecological Conservation annual retreat. *Workshop co-organizer and moderator*, Tampa, FL, 2023.

Select symposia and workshops

1. Applied Earth Observations Innovation Partnership monthly webinar series (2023-2024). *Workshop organizer*, Ann Arbor, 2024
2. Advances in airborne and satellite remote sensing for wildlife ecology and management. *Session organizer, moderator, and presenter*, The Wildlife Society annual conference, 2023

3. Bridging the gap between science and decision-making through the rapid prototyping of decision support tools. Co-organizer with D. Valle and L.S. Wszola. *Session organizer*, Ecological Society of America annual conference, 2020

4. Using the integrated modelling framework to bridge science and decision making: advances, applications, and opportunities. Co-organizer with J.A. Royle. *Session organizer, moderator, and presenter*, The Wildlife Society annual conference, 2020

5. Opportunities and Challenges in Big Data Ornithology. *Session co-organizer*, North American Ornithological Conference V, 2016

Personal Interests

- Enjoys competitive sports including volleyball and disc golf
- Known to bring elaborate bakes to work for office events
- Recreational baker who often shares new creations with co-workers and friends
- Likes to play card, board, word, and video games
- Volunteers as a mentor with science diversity initiatives including Disabled in STEM, Letters to a Pre-scientist, and Skype a Scientist
- Enjoys casually biking around town, especially when the destination is a coffee shop, library or thrift store